100

Processor
102

ROM
104

RAM
103

Data Storage
Device
105

Bus 101

Display
Device
108

Alphanumeric
Input
106

Cursor
Control
107

Connection
to Network
109

FIG_1

Quality of Service Target(s) =   {response_time = x seconds;
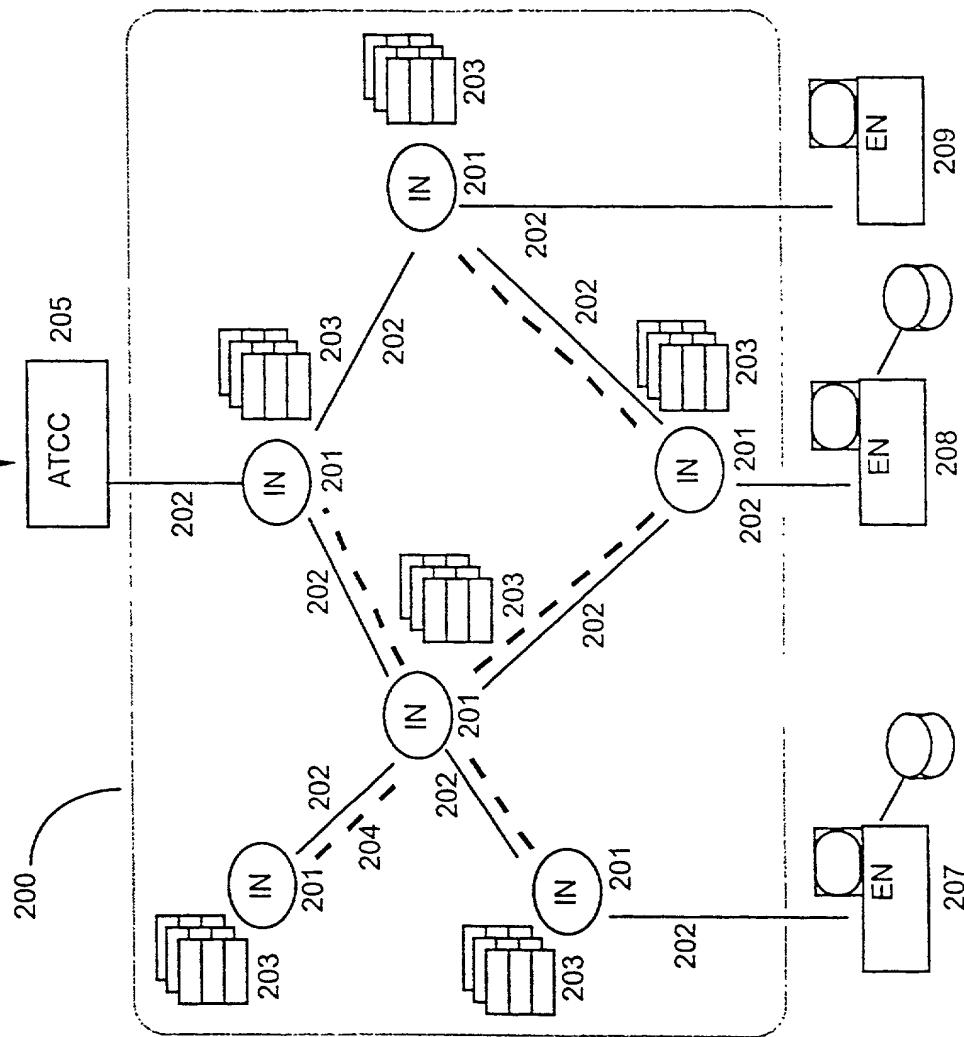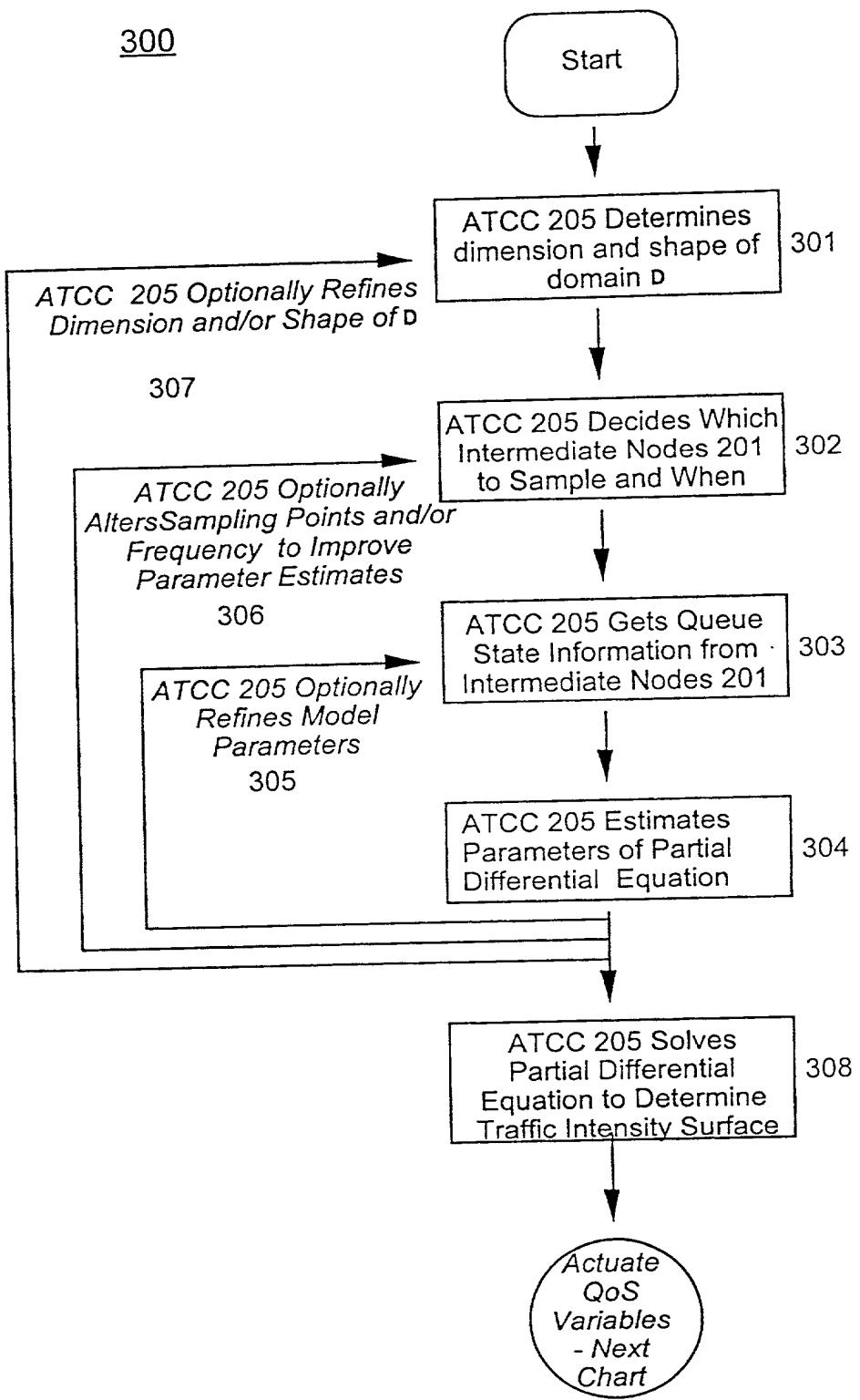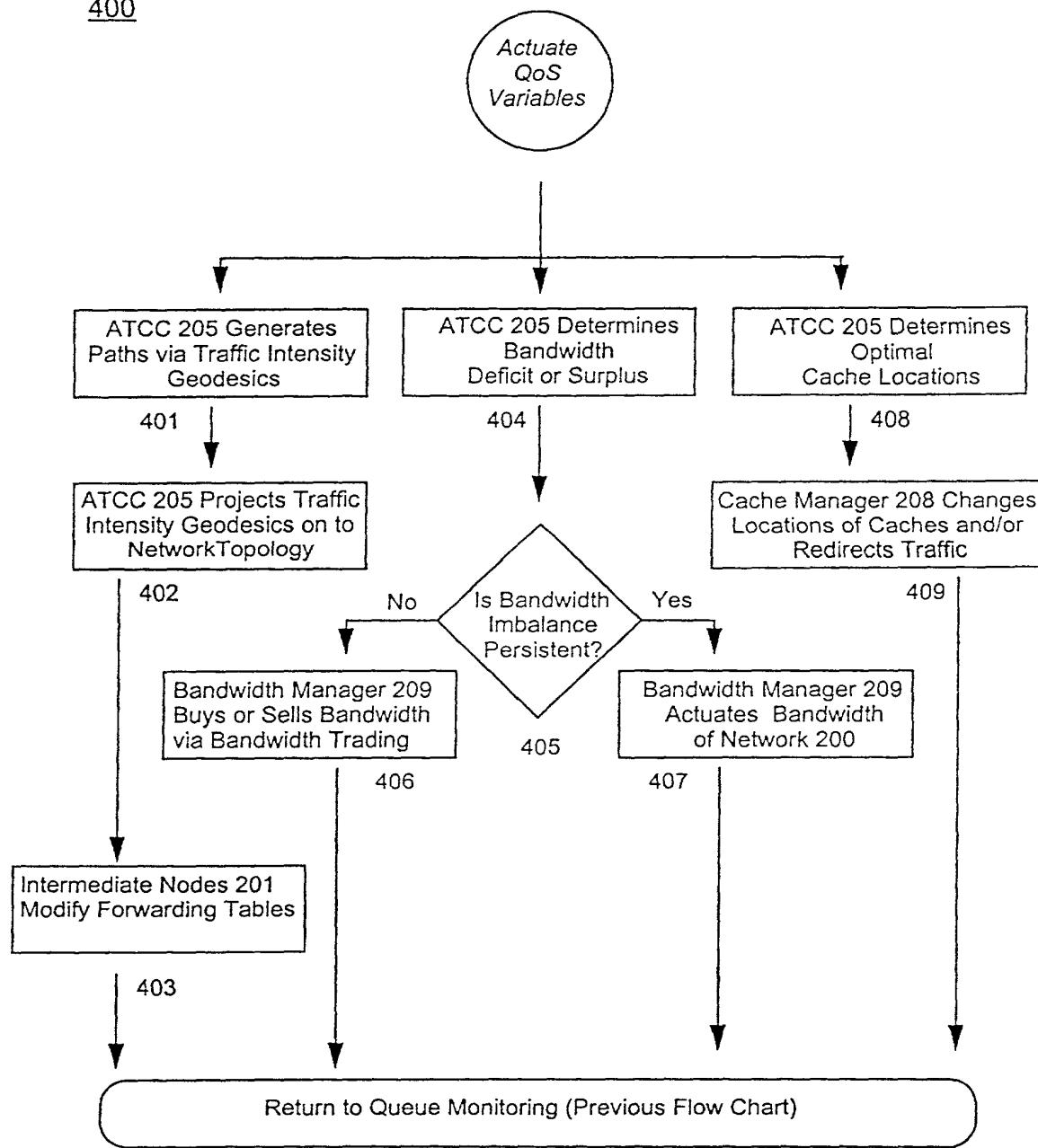   throughput = y packets
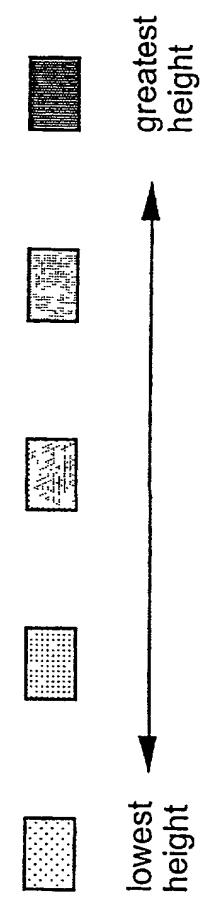
206

205

ATCC

200

IN 201

202

203

EN 207

EN 208

EN 209

204

FIG_2

300

```
                                    ┌─────────┐
                                    │  Start  │
                                    └─────────┘
                                         │
                                         ▼
                            ┌──────────────────────────┐
                            │ ATCC 205 Determines       │
      ATCC 205 Optionally   │ dimension and shape of    │ 301
      Refines               │ domain D                  │
      Dimension and/or      └──────────────────────────┘
      Shape of D                         │
           307                           ▼
                            ┌──────────────────────────┐
      ATCC 205 Optionally   │ ATCC 205 Decides Which    │ 302
      Alters Sampling       │ Intermediate Nodes 201    │
      Points and/or         │ to Sample and When        │
      Frequency to Improve  └──────────────────────────┘
      Parameter Estimates              │
           306                         ▼
                            ┌──────────────────────────┐
      ATCC 205 Optionally   │ ATCC 205 Gets Queue       │ 303
      Refines Model         │ State Information from     │
      Parameters            │ Intermediate Nodes 201    │
           305              └──────────────────────────┘
                                         │
                                         ▼
                            ┌──────────────────────────┐
                            │ ATCC 205 Estimates        │ 304
                            │ Parameters of Partial     │
                            │ Differential Equation     │
                            └──────────────────────────┘
                                         │
                                         ▼
                            ┌──────────────────────────┐
                            │ ATCC 205 Solves           │ 308
                            │ Partial Differential      │
                            │ Equation to Determine     │
                            │ Traffic Intensity Surface │
                            └──────────────────────────┘
                                         │
                                         ▼
                                  ┌─────────────┐
                                  │  Actuate    │
                                  │  QoS        │
                                  │  Variables  │
                                  │  - Next     │
                                  │  Chart      │
                                  └─────────────┘
```

FIG_3

400

Actuate
QoS
Variables

ATCC 205 Generates
Paths via Traffic Intensity
Geodesics
401

ATCC 205 Determines
Bandwidth
Deficit or Surplus
404

ATCC 205 Determines
Optimal
Cache Locations
408

ATCC 205 Projects Traffic
Intensity Geodesics on to
NetworkTopology
402

Cache Manager 208 Changes
Locations of Caches and/or
Redirects Traffic
409

Is Bandwidth
Imbalance
Persistent?
405

No

Yes

Bandwidth Manager 209
Buys or Sells Bandwidth
via Bandwidth Trading
406

Bandwidth Manager 209
Actuates Bandwidth
of Network 200
407

Intermediate Nodes 201
Modify Forwarding Tables
403

Return to Queue Monitoring (Previous Flow Chart)

FIG_ 4

FIG_5

greatest
height

lowest
height